

The apparatus of the present invention may be set to operate in a vertical mode, where the sails move in a vertical direction or it may be set to operate in a horizontal mode where the sails move in a horizontal direction upon the action of the wind as has been mentioned.

The wind-driven power generator as described in one or another embodiment herein is adaptable for large- as well as for small-size installations, the latter for example, when such generators are placed on top of dwellings or on top of towers for the production of supplemental or full scale electrical power in rural or in city surroundings.

Other advantages of the present invention, together with the organization and manner of operation thereof, will become apparent from the following detailed description of the invention when taken in conjunction with the accompanying drawings wherein like reference numerals designate like elements throughout the several views, and wherein:

FIG. 1 presents a schematic plan view of the apparatus showing the position of the sails under the action of the wind.

FIG. 2 presents a schematic three-dimensional view of the apparatus, where a total of four sprocket wheels are used.

FIG. 3 presents a schematic end-view of the apparatus showing the placement of the sails (shown as rectangles) at two elevations as they move around the sprocket wheels from upwind to downwind positions respectively for the apparatus depicted schematically in FIG. 2.

FIG. 4 presents a schematic three-dimensional view of the apparatus, where a total of eight smaller-size sprocket wheels are used.

FIG. 5 presents a schematic end-view of the apparatus showing the placement of the sails (shown as rectangles) at two elevations as they move around the smaller sets of sprocket wheels from upwind to downwind positions respectively for the apparatus depicted schematically in FIG. 4.

### **Detailed Description of the Apparatus**

The wind-driven power-generator constructed in accordance with one preferred embodiment of the present invention is indicated generally at 10 in Figures 1, 2, and 4. The sails 1 (a, b, c, etc.) may be rectangular or rhomboidal in shape. Sails made of flexible material such as cloth for example, are supported by an upper and by a lower boom, 3A and 3B respectively (Figures 2 and 4). In other embodiments, said sails may be constructed of rigid material. The overall width of each sail may vary by design and preferably a whole number of sails will be disposed onto the supporting chains 2A and 2B. The forward end of each of the booms 3A and 3B or of the rigid sail, is pivotally attached to each of the two said chains while their trailing ends are attached similarly to said chains by swivelling brackets 4A and 4B (Figure 4) of variable length by design. Adjustments to the length of said brackets provides control of the speed of the sail/chain assembly particularly in the case of strong winds.

Said supporting endless chains 2A and 2B engage pairs of sprocket wheels 6,7 and

6A,6B (Figure 2), or 16,17 / 18,19 and 16A,17A /18A,19A (Figure 4), so that the sails/chain assembly moves linearly under the action of the wind.

The sails of the apparatus of our invention can be placed in close proximity to one another and still provide unobstructed wind power to those sails which have moved to the “rear” or downwind of the apparatus. This increases the ratio of sail area-to-overall area of the apparatus.

The sails 1 (-A, -B, -C, etc. ), of the wind-powered generator, divert the direction of the wind 5 generating two force components, one in a direction grazing the surface of the sail, and the other component essentially perpendicular to the direction of the wind and essentially parallel to the direction of movement of the sail/sprocket-chain assembly. It is the latter force component which causes the linear motion of the sails/chain assembly.

Thus mechanical power is delivered to the set of sprocket wheels 6, 6A and 7, 7A, (Figure 2), or to the smaller wheels (Figure 4), and through their shafts to the motor generator (not shown) to produce electrical power.

As noted earlier the apparatus of the present invention utilizes each and every sail twice, that is sail 1A for example, captures the full power of the wind when in position 1A / 8 and again when in position 1B / 9 as shown in Figures 2, 3, 4, and 5. Thus full utilization of the power of the wind by each and every sail is accomplished by the unique placement and tilt of said